

# Broadband over Power Lines "BPL"

## The Ameren Experience

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### Today's Presentation

- BPL Overview
- Ameren's BPL technical trial in Cape Girardeau, MO
- Further development of BPL

### BPL Key Drivers

### BPL Applications

- High Speed Data
- Voice
- Video Services (On Demand & Conferencing)
- In-Building BPL
  - System Monitoring & Control
  - Security Monitoring
  - High Speed Data
- Operational
  - Automatic meter reading
  - Capacitor control
  - Power quality monitoring
- Reliability (Prevention & Restoration)
  - Real Time Demand Monitoring (Transformers & Feeders)
  - Detection and diagnosis of events at capacitors and regulators
  - Outage Monitoring, Diagnosis & Isolation
  - Phase loss detection
  - Distribution Substation monitoring
- Security Monitoring

### Ameren Technical Trial Objectives

- Better understand BPL components and their impact on the AmerenUE distribution network
- Determine appropriate business model for BPL deployment
- Develop communications backhaul solutions
- Evaluate the customer acceptance of BPL broadband access
- Study utility applications of BPL
- Determine requirements for advancing to a commercial trial of BPL

### BPL System

### Components

### BPL Overhead Deployment

### BPL Underground Deployment

## Cape Girardeau Technical Trial

- Trial deployed in 2001 via Ameren Subsidiary, Ameren Energy Communications, Inc. (AEC)
  - ➔ An unregulated affiliate company
  - ➔ All equipment and time incurred by utility personnel was charged to AEC.
- Equipment development and selection
  - ➔ Main technology provider was Main.net PLC, Ltd.
  - ➔ Partnered with SIU-C to study emissions/interference, do technical performance evaluations.

## Cape Girardeau Technical Trial

- Formed partnership with Big River Telephone Company, (Competitive Local Exchange Carrier, Cape Girardeau) for the provision of:
  - ➔ Leased lineT-1 backhaul at Cu (Injection Points)
  - ➔ All Internet Services (transport, web space, email, home page)
  - ➔ Network Management, NOC supervision
  - ➔ Customer Care

## Cape Girardeau Technical Trial

- Trial “passes” 300 homes. Geographic area determined based on customer demographics to include Ameren Overhead and Underground facilities.
- The trial area was approximately 5 miles from Big River’s backhaul Point of Presence (POP) and 120 miles from the nearest Internet POP (St. Louis).
- Participants were selected first come/first serve in response to a postcard soliciting volunteers. (Sent postcards to all 300 homes, took first 53 participants)
- Participants pay nothing for the service
- BPL equipment is easy to install.
- Biggest challenge was turning away others that wanted the BPL service and continues to be handling requests for expansion.

## Cape Girardeau Technical Trial

- Lessons learned:
  - ➔ The service works. Customer realize speeds between 300-800 kbps, (synchronous) 24/7.
  - ➔ BPL equipment is rugged and withstands all weather conditions in SE Missouri. Maintenance and Repair costs minimal during the trial.
  - ➔ BPL equipment and service effectively support VoIP service.
  - ➔ Utility applications (AMR & Capacitor control) work well. Cost and availability of IP enabled utility end point devices not at mass market level needed for scalable expansion.
  - ➔ Participants are pleased and like the flexibility of the modem working in any outlet.
  - ➔ The technology continues to evolve, the Cape Girardeau equipment is already out dated.
  - ➔ Interference and/or harmful emissions can and were mitigated.

## BPL August 2005

- Technical Trial is complete

- Ameren has no plans at this time to expand to a commercial market trial
- More utilities and Munis are looking into BPL
- Service speeds increasing rapidly: 1-3Mbps (synchronous) to user desktop is standard today. Equivalent to cable (only asynchronous) and faster than DSL
- Big names entering the arena: Mitsubishi, Motorola, Google
- BPL continues to gain support from public policy makers
- Internal utility applications are critical to widespread deployment of BPL by Ameren
- BPL standards efforts are quickly developing under IEEE

## BPL in the US August 2005

### Questions

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